Space Weather Forecast

Issued on Sunday, 14 July 2024 at 13:22 Local

This forecast provides a four day assessment of space weather events. The probabilities stated below are for reaching or exceeding the given levels. For more information about space weather impacts please see the Met Office Space Weather Scales https://www.metoffice.gov.uk/weather/learn-about/space-weather/uk-scales

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Space Weather Forecast Headline: Moderate Class flares expected (R1-R2 Blackouts)

Analysis of Space Weather Activity over past 24 hours

Solar Activity: High with up to ten Moderate-class flares and one Strong-class flare. The majority of these were from the large and complex spot in the southwest. There are eleven other sunspot regions on the visible disc. A moderately sized and complexity spot near the southeast limb. Two other spots near centre disk in the southeast have unstable magnetic alignment but aren't considerably large. All other spots are smaller and simple.

Despite the number of solar flares, no Earth-directed coronal mass ejections have been observed.

Solar Wind / Geomagnetic Activity: Slow wind conditions dominated the solar wind environment. Observed speeds at persisted at slow-ambient. Total Interplanetary Magnetic Field was weak with the north-south component weak and variable. Geomagnetic activity was Quiet (Kp 0-2).

Energetic Particles / Solar Radiation: The count rate of energetic particles (high energy protons) persisted at Background with no solar radiation storms occurring.

Four-Day Space Weather Forecast Summary

Solar Activity: Moderate-class flares remain Likely, with a slight chance of further strong-class flares. The large sunspot region in the southeast is the most probable source. No significant regions are due to depart or arrive through the period - keeping a flat risk throughout.

Solar Wind /Geomagnetic Activity: There are no Earth-directed coronal mass ejections. Initial slow wind conditions may be followed by a slight enhancement due to the onset of the fast winds from a coronal hole on day 1 (14 Jul). Any enhancement then easing day 2 (15 Jul) onward. Mainly Quiet geomagnetic activity expected, with isolated Unsettled intervals. Any fast wind enhancement on day 1 into day 2 (14-15 Jul) will bring a likelihood of an Unsettled to Active spell and a slight chance of G1 Minor Storm intervals.

Energetic Particles / Solar Radiation: The count rate of energetic particles (high energy protons) has a chance of rising in response to any notable flares, primarily from the large sunspot on the disc.

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Geomagnetic Storms:

Geo-Magnetic Storm Probability (Exceedance)	Level	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Minor or Moderate	G1 to G2	No	20	10	1	1
Strong	G3	No	1	1	1	1
Severe	G4	No	1	1	1	1
Extreme	G5	No	1	1	1	1

Radio Blackouts - X Ray Flares:

X Ray Flares Probability	Level	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Active	R1-R2 M Class	Yes	80	80	80	80
Very Active	R3 to R5 X	No	20	20	20	20

Solar Radiation Storms - (High Energy Protons):

Radiation Storms Probability (Exceedance)	Level (cm^{-2} sr^{-1} s^{-1})	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Active	≥ S1	No	20	20	20	20
Very Active	≥ S3 *	No	1	1	1	1

* S3 ≥ 10 MeV ≥ 1000 pfu and / or ≥ 50 MeV ≥ 10 pfu. (pfu = $cm^{-2}sr^{-1}s^{-1}$)

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